

Name: \_\_\_\_\_ TP: \_\_\_\_\_

FORM A

HW#6: Midpoint

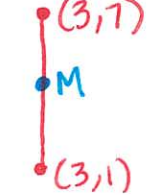
Geometry

Due Date: Tuesday, Sept. 10<sup>th</sup>, 2013

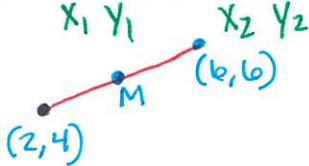
Failure to show work on all problems or use complete sentences will result in a LaSalle.

1. Find the coordinates of the midpoint of the segment with the given endpoints.

a. R(3, 1) and S(3, 7)



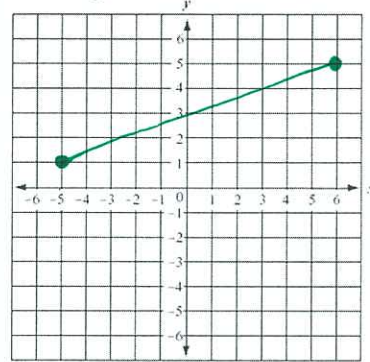
b. V(2, 4) and W(6, 6)



$$\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

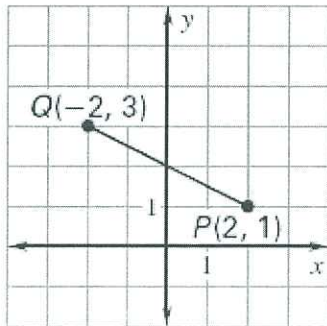
2. The endpoints of QR are Q(-5, 1) and R(6, 5).

a. Graph the coordinates.

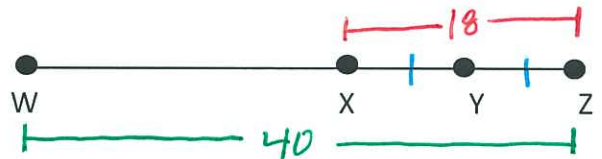


b. Find the coordinates of the midpoint M.

3. Find the midpoint of the segment QP.

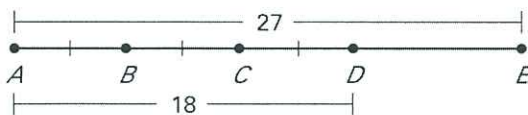


4. Points W, X, Y, and Z are collinear. WZ = 40, XZ = 18, and Y is the midpoint of XZ. What is the length of XY?



\*Tick marks mean the segments are congruent\*

5. Find the indicated length.



a. DE = AE - AD = 27 - 18 = 9

b. AB

c. AC

d. BD

e. CE

f. BE \*Tick marks mean the segments are congruent\*

6. On a number line, point Q is located at 10, point R is located at -5, and point S is located at -13.

Label all lengths on the number line

a. Draw a number line.

b. Find the length of QS.

c. Find the length of RS.

d. How much longer is Segment QS than RS?

7. What is a real- life example of when we would need to find the midpoint of two things? Please do not use any examples given in class.

8. Now that you know how to find the midpoint from two endpoints, tweak your understanding of the formula to uncover a way to divide a line segment into three equal parts. What would the formula look like?



9. What is the slope of  $\overline{CD}$  if  $C(5, -4)$  and  $D(5, 2)$ ?

$$\begin{matrix} x_2 & y_2 & & x_1 & y_1 \\ & & \frac{y_2 - y_1}{x_2 - x_1} \end{matrix}$$

Is this a line or a line segment? \_\_\_\_\_

How do you know - write one complete sentence.

10.

The graph shows the number of new Broadway show productions for certain years.

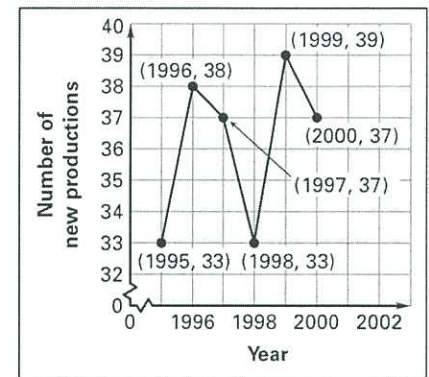
Find the rate of change (slope) between:

a. 1995 to 1996

(1995, 33)  
(1996, 38)

b. 1998 to 1999

c. Which year had the greatest rate of change? (slope)  
How do you know?



11. What is the value of  $x$ ?

$(x, 1)$  and  $(-5, -6)$ ; slope:  $\frac{7}{6}$   
 $x_1 y_1$   $x_2 y_2$   $m = 7/6$

$$\frac{y_2 - y_1}{x_2 - x_1} = m$$

$$\frac{-6 - 1}{-5 - x} = \frac{7}{6} \quad (\text{cross-multiply!})$$

12. Error Analysis:

Teresa encountered this problem:

"Find the midpoint if the coordinates of the endpoints are  $(-4, -10)$  and  $(6, 7)$ ."

She proceeded by adding  $-4$  and  $-10$  and dividing by two for the  $x$ - coordinate and adding  $6$  and  $7$  and dividing by two for the  $y$ - coordinate.

Her final answer was  $(-7, 6.5)$ . Given that Lucy's response was incorrect, explain the error in her reasoning. USE WORDS & NUMBERS.



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**\*ALWAYS DRAW THE SEGMENT\*****Failure to show work on all problems or use complete sentences will result in a LaSalle.**

1. Find the other endpoint of the line segment with the given endpoint and midpoint.

 $x_1, y_1$  Mid  $x$  Mid  $y$   
Endpoint:  $(-1, -7)$ , midpoint:  $(-1, -9)$ 

$$\frac{-1 + x_2}{2} = -1 \quad \frac{-7 + y_2}{2} = -9$$

$$\frac{-1 + x_2}{2} = -1 \quad \frac{-7 + y_2}{2} = -9$$

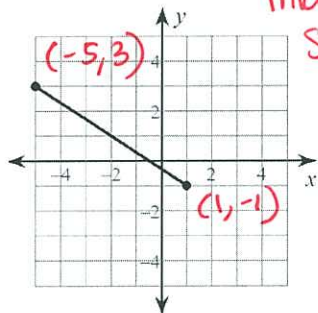
2. Find the other endpoint of the line segment with the given endpoint and midpoint.

Endpoint:  $(2, -10)$ , midpoint:  $(5, 2)$ 

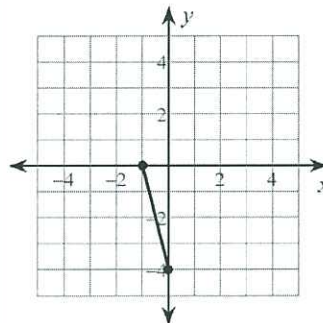
$$\frac{2 + x_2}{2} = 5 \quad \frac{-10 + y_2}{2} = 2$$

3. The midpoint of XZ is  $M(1, 2)$ . One endpoint is  $X(0, -2)$ . Find the coordinates of endpoint Z.① Draw the segment  
② set up the equation4. The midpoint of AB is  $M(8, -8)$ . One endpoint is  $A(-4, 10)$ . Find the coordinates of endpoint B. (See #1-3)

5. Find the midpoint. ① Write down the midpoint formula &amp; solve!



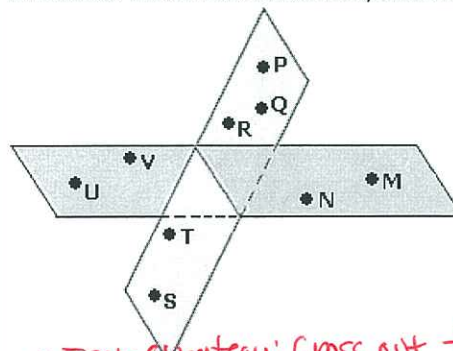
6. Find the midpoint. See #5

7. On a particular line segment, points Q, R, and S are collinear and R is between Q and S.  
↳ on the same line

a. Draw the line segment.

b. If  $QR = 8$  cm and  $RS = 13$  cm, what is the measure of  $QS$ ?c. If  $QS = 31$  inches and  $RS = 7$  inches, what is the measure of  $QR$ ?

8. Choose the correct statement/statements.

**\*Test Strategy:** Cross out the options that you know are false.

- I. P, Q, R, U, and V are coplanar (on the same plane)  
 II. U, V, N, and M are collinear (on the same line)  
 III. P, Q, R, T, and S are coplanar  
 IV. M, N, T, S and P are coplanar

- A. III and IV only  
 B. I and II only  
 C. I only  
 D. III only

9a) A line passes through the points  $(-3, 4)$  and  $(4, 1)$ . What is the slope of this line?

Slope Formula: Solve:

Sketch the line:

(Increasing or decreasing?)

10a) Find the slope between  $(8, 10)$  and  $(8, -2)$ .

b) Sketch the line:

c) What do we call this kind of line?

11. Reflection:

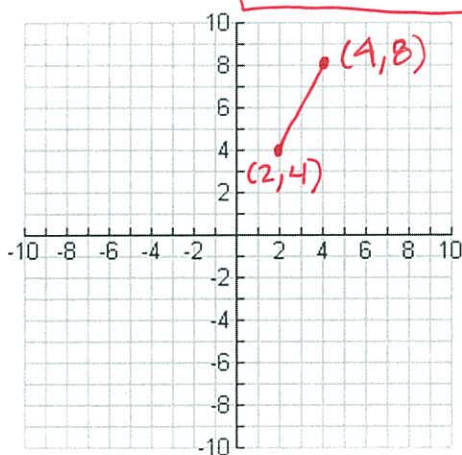
Tomas was uncertain about finding an endpoint given a midpoint and the other endpoint: Explain in your own words a method of finding this as basic as you can state it: (complete sentences)

12. Describe a scenario where knowing the midpoint but not exactly the other endpoint might present itself in your life and what knowing this information can do for you? (complete sentences)

13. Graph the coordinates of the two endpoints and find the midpoint:

$(2, 4)$  and  $(4, 8)$

Midpoint Formula:



14. Graph the coordinates of the two endpoints and find the midpoint: (same as #13)

$(-1, 5)$  and  $(5, 5)$

